

James.—Fossils of Cincinnati group.  
1881.

1881.

HARVARD UNIVERSITY



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Nov. 13, 1906

# CATALOGUE

OF THE

NATURAL HISTORY

## FOSSILS

MUS. COMP. ZOOL.  
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OF THE

HARVARD  
UNIVERSITY

CINCINNATI GROUP.

HENRY  
MUS. COMP. ZOOLOGY,  
CAMBRIDGE, MASS.

By JOS. F. JAMES,

Custodian Cincinnati Society of Natural History.

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PUBLISHED BY ORDER OF COMMITTEE ON  
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FROM

Mr. C. H. Johnson

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## P R E F A C E.

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The following catalogue of the Fossils of the Cincinnati Group, is a compilation from the various catalogues which have appeared from time to time. These were by Mr. U. P. James, Mr. S. A. Miller, Mr. E. O. Ulrich, and Messrs. Wetherby and Mickleborough. Besides the fossils of these lists, there have been incorporated in this one all the species described up to November 1, 1881, and published in the *Journal of the Cincinnati Society of Natural History* and elsewhere.

The object in view in the printing of this list, is to have it answer as a check list of the fossils of the Cincinnati Group; and to serve to show the species of the Group represented in the cabinet of the society. The species in the cabinet are marked with an asterisk (\*) for good specimens, and a dagger (†) for poor specimens. Those without any mark are not represented at all. The genera of the various classes, and the species of the genera, have been arranged alphabetically for convenience in reference. A number of Mr. Ulrich's species, taken from his catalogue, have not as yet been described. Such species are indicated by a section mark (§) at the end.

JOS. F. JAMES,

Custodian Cincinnati Society of Natural History.

November 15, 1881.



CATALOGUE  
OF THE  
Fossils of the Cincinnati Group.

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PLANTÆ.

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Order ALGÆ.

*Aristophycus ramosum*, Miller & Dyer.  
*Aristophycus ramosum*, var. *germanum*, M. & D.  
*Arthraria biclavata*, S. A. Miller.  
*Blastophycus diadematum*, Miller & Dyer.  
*Buthotrephis filciformis*, James.  
✓\**Buthotrephis gracilis*, Hall.  
✓\**Buthotrephis gracilis*, var. *crassa*, Hall.  
\**Buthotrephis ramulosa*, S. A. Miller.  
*Buthotrephis succulosa*, Hall.  
*Chloephycus plumosum*, Miller & Dyer.  
*Conostichus truncatus*, Ulrich.§  
*Cyclophycus laterale*, Ulrich.§  
*Dactylophycus quadripartitum*, Miller & Dyer.  
*Dactylophycus tridigitatum*, Miller & Dyer.  
*Discophycus typicalis*, Walcott.  
*Dystactophycus mammillanum*, Miller & Dyer.  
*Heliophycus stelliforme*, Miller & Dyer.  
\**Licrophycus flabellum*, Miller & Dyer.  
\**Lockeia siliquaria*, James.  
*Nullipora (?) crustulata*, Ulrich.§  
\**Palæophycus flexuosum*, James.  
*Palæophycus ornatum*, Ulrich.§  
*Palæophycus sculptum*, Ulrich.§  
*Palæophycus tubulare*, Hall.

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\**Rusophycus asperum*, Miller & Dyer.  
 ✓ \**Rusophycus bilobatum*, Hall.  
 \**Rusophycus pudicum*, Hall.  
*Saccophycus intortum*, James.  
*Trichophycus lanosum*, Miller & Dyer.  
*Trichophycus sulcatum*, Miller & Dyer.  
*Trichophycus venosum*, S. A. Miller.

Order EQUISETACEÆ.

*Sphenophyllum primævum*, Lesquereux.

Order LYCOPODIACEÆ.

*Protostigma sigillaroides*, Lesquereux.  
 \**Psilophyton* (*Dendrograptus*, Hall) *gracillimum*,  
 Lesquereux.

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PROTOZOA.

Order SPONGIDA.

*Astylospongia foveolata*, James.  
*Astylospongia globosa*, Ulrich.§  
*Astylospongia* (*Chætetes*) *subrotunda*, James.  
*Astylospongia tumida*, James.  
*Brachiospongia digitata*, Owen.  
*Brachiospongia lyoni*, Marsh.  
*Brachiospongia rœmerana*, Marsh.  
*Brachiospongia tuberculata*, James.  
*Calathium obliquum*, Ulrich.§  
*Cystospongia tuberosa*, Ulrich.§  
*Eospongia* (?) *communis*, Ulrich.§  
*Eospongia turnerensis*, Ulrich.§  
*Eridostroma densa*, Ulrich.§  
*Eridostroma* (?) *densissima*, Ulrich.§  
*Heterospongia aspera*, Ulrich.§  
*Heterospongia knotti*, Ulrich.§  
*Heterospongia nodulosa*, Ulrich.§  
*Heterospongia subramosa*, Ulrich.§

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*Microspongia gregaria*, Miller and Dyer.  
*Microspongia irregularis*, Ulrich.§  
*Streptospongia confusa*, Ulrich.§  
*Streptospongia labyrinthica*, Ulrich.§  
*Stromatocerium rugosum*, Hall.  
\**Stromatopora* (*Chonopora*, Ulrich) *lichenoides*, James  
\**Stromatopora* (*Chonopora*, Ulrich) *papillata*, James.  
*Stromatopora* (*Chonopora*, Ulrich) *scabra*, James.  
*Tricholites typicalis*, Ulrich.§

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## CŒLENTERATA.

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### Class POLYPI.

*Atactopora hirsuta*, Ulrich.  
\**Atactopora maculata*, Ulrich.  
\**Atactopora multigranosa*, Ulrich.  
*Atactopora mundula*, Ulrich.  
\**Atactopora septosa*, Ulrich.  
*Atactopora subramosa*, Ulrich.  
*Atactopora tenella*, Ulrich.  
\**Alveolites granulosus*, James.  
*Beatricea marionensis*, Ulrich.§  
*Beatricea nodulosa*, Billings.  
*Beatricea undulata*, Billings.  
*Beatricea subplana*, Ulrich.§  
—\**Climacograptus bicornis*, Hall.  
—\**Climacograptus typicalis*, Hall.  
—\**Columnaria alveolata*, Goldfuss.  
\**Columnaria halli*, Nicholson.  
*Columnaria calicina*, Nicholson.  
\**Columnopora cribriformis*, Nicholson.  
*Columnopora* (?) *parva*, Ulrich.§  
\**Crateripora* (*Sagenella*, Hall) *erecta*, Ulrich.  
*Crateripora* (*Sagenella*, Hall) *expansa*, Ulrich.  
*Crateripora* (*Sagenella*, Hall) *lineata*, Ulrich.  
\**Crateripora* (?) (*Sagenella*, Hall) *striata*, James.

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- \**DeKayia appressa*, Ulrich.
- \**DeKayia aspera*, Edwards and Haime.
- DeKayia maculata*, James.
- \**DeKayia minuta*, Ulrich.§
- \**DeKayia obscura*, Ulrich.§
- DeKayia pusulata*, Ulrich.§
- Dendrograptus tenuiramosus*, Walcott.
- Dicranograptus ramosus*, Hall.
- \**Dictyograptus reticulatus*, Ulrich.§
- Dictyonema irregulare*, Hall.
- Diplograptus spinulosus*, Hall.
- Diplograptus whitfieldi*, Hall.
- \**Favistella stellata*, Hall.
- \**Fistulipora flabellata*, Ulrich.
- \**Fistulipora multipora*, James.
- Fistulipora robusta*, Ulrich.§
- \**Fistulipora siluriana*, James.
- Graptolithus gracilis*, Hall.
- Graptolithus tenuis*, (?) Portlock.
- Heliolitus shepardi*, James.
- Inocaulus arbustula*, Ulrich.
- Megalograptus welchi*, S. A. Miller.
- \**Monticulipora* (Ch.) *æqualis*, Ulrich.§
- Monticulipora andrewsi*, Nich.
- Monticulipora* (Ch.) *approximata*, Nicholson.
- \**Monticulipora* (Ch.) *astricta*, Ulrich.§
- Monticulipora* (Ch.) *attrita*, Nicholson.
- Monticulipora* (Ch.) *barrandi*, (?) Nicholson.
- \**Monticulipora* (Ch.) *briareus*, Nicholson.
- \**Monticulipora* (Ch.) *calceolus*, Miller & Dyer.
- \**Monticulipora* (Ch.) *calyculus*, James.
- \**Monticulipora* (Ch.) *cincinnatiensis*, James.
- \**Monticulipora* (Ch.) *clathratula*, James.
- \**Monticulipora* (Ch.) *clavacoidea*, James.
- Monticulipora* (Ch.) *compressa*, Ulrich.
- \**Monticulipora* (Ch.) *clavis*, Ulrich.§
- \**Monticulipora* (Ch.) *concava*, Ulrich.§

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- \**Monticulipora* (Ch.) *crustulata*, James.
- \**Monticulipora* (Ch.) *dalei*, Ed. & H.
  - Monticulipora* (Ch.) *dawsoni*, Nich.
- \**Monticulipora* (Ch.) *decipiens*, Rominger.
- \**Monticulipora* (Ch.) *delicatula*, Nich.
- \**Monticulipora* (Ch.) *discoidea*, James.
  - Monticulipora* (Ch.) *elegans*, Ulrich.
  - Monticulipora* (Ch.) *expatiata*, Ulrich. §
- \**Monticulipora* (Ch.) *filiasa*, D'Orb.
- \**Monticulipora* (Ch.) *frondosa*, D'Orb.
- \**Monticulipora* (Ch.) *gracilis*, James.
  - Monticulipora* (Ch.) *granulifera*, Ulrich.
  - \**Monticulipora* (Ch.) *implicata*, Ulrich.
  - \**Monticulipora* (Ch.) *irregularis*, Ulrich.
  - \**Monticulipora* (Ch.) *jamesi*, Nich.
  - \**Monticulipora* (Ch.) *lateralis*, Ulrich. §
  - Monticulipora* (Ch.) *lycopodites*, Vanux.
- \**Monticulipora* (Ch.) *mammulata*, Ed. & H.
  - \**Monticulipora* (Ch.) *meeki*, James.
  - \**Monticulipora* (Ch.) *minuta*, James.
    - Monticulipora* *molesta*, Nich.
  - \**Monticulipora* (Ch.) *newberryi*, Nich.
- \**Monticulipora* (Ch.) *nodulosa*, Nich.
  - \**Monticulipora* (Ch. ?) *o'neali*, James.
- \**Monticulipora* (Ch. *Atactopora*, Ulrich) *ortoni*, Nich.
  - Monticulipora* (Ch. *Nebulipora*) *papillata*, McCoy.
- \**Monticulipora* (*Heterodictya*, Nich., Ch.) *pavonia*, D'Orb.
  - *Monticulipora* *petasiformis*, Nich.
    - \**Monticulipora* (Ch.) *petechialis*, Nich.
  - \**Monticulipora* (Ch.) *petropolitana*, Pander.
    - \**Monticulipora* (Ch.) *pulchella*, Ed. & H.
    - \**Monticulipora* (Ch.) *quadrata*, Rominger.
  - \**Monticulipora* (Ch.) *ramosa*, D'Orb.
    - Monticulipora* (Ch.) *rariplanda*, Ulrich. §
    - Monticulipora* (Ch.) *recta*, Ulrich. §
  - \**Monticulipora* (Ch.) *rugosa*, Ed. & H.

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*Monticulipora selwynii*, var. *hospitalis*, Nich.  
*Monticulipora* (Ch.) *sigillaroides*, Nich.  
*Monticulipora* (Ch. ? *Atactopora*) *simulans*, Ulrich. §  
*Monticulipora* (Ch.) *subglobosa*, Ulrich.  
*Monticulipora* (Ch.) *subpulchella*, Nich.  
*Monticulipora* (Ch.) *subquadrata*, Ulrich. §  
*\*Monticulipora* (Ch.) *tuberculata*, Ed. & H.  
*\*Monticulipora* (Ch. *fletcheri*) *ulrichi*, Nicholson.  
*\*Monticulipora* (Ch.) *varians*, James.  
*Monticulipora* (Ch.) *venusta*, Ulrich.  
*\*Monticulipora* *whitfieldi*, James.  
*\*Monticulipora* (Ch.) *whiteavesi*, Nicholson.  
*Palaeophyllum* *divaricans*, Nicholson.  
*\*Protarea* *vetusta*, Edwards and Haime.  
*Protarea* *vetusta*, var. *verneuili*, Edwards & Haime.  
*\*Stellipora* *antheloidea*, Hall.  
*\*Stellipora* *plana*, Ulrich. §  
*Stellipora* *limitaris*, Ulrich.  
*\*Streptelasma* *corniculum*, Hall.  
*Streptelasma* *sessile*, Ulrich.  
*Tetradium* *cellulosum*, Hall.  
*Tetradium* *columnare*, Hall.  
*\*Tetradium* *fibratum*, Safford.  
*\*Tetradium* *minus*, Safford.  
*Zaphrentis* *ohioensis*, James.

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## ECHINODERMATA.

### Order CRINOIDEA.

*Anomalocrinus caponiformis*, Lyon.

*Anomalocrinus incurvus*, Meek & Worthen. *Stenocrinus*

*Glyptocrinus angularis*, S. A. Miller.

*Glyptocrinus baeri*, Meek.

*Glyptocrinus cognatus*, S. A. Miller.

*\*Glyptocrinus decadactylus*, Hall.

*\*Glyptocrinus dyeri*, Meek.

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*Glyptocrinus dyeri*, var. *sublevis*, S. A. Miller.  
*Glyptocrinus fornshelli*, S. A. Miller.  
*Glyptocrinus harrisi*, S. A. Miller.  
†*Glyptocrinus o'nealli*, Hall.  
*Glyptocrinus parvus*, Hall.  
*Glyptocrinus shafferi*, S. A. Miller.  
*Glyptocrinus shafferi*, var. *germanus*, S. A. Miller.  
*Glyptocrinus (?) simplex*, Wetherby.  
*Glyptocrinus subglobosus*, Meek.  
*Glyptocrinus ulrichi*, Wetherby.  
*Heterocrinus constrictus*, Hall.  
*Heterocrinus constrictus*, var. *compactus*, Meek.  
*Heterocrinus exilis*, Hall.  
*Heterocrinus exilis*, var. *exiguus*, Meek.  
*Heterocrinus (Iocrinus) geniculatus*, Ulrich.  
*Heterocrinus heterodactylus*, Hall.  
*Heterocrinus juvenis*, Hall.  
*Heterocrinus laxus*, Hall.  
✓ \**Heterocrinus simplex*, Hall.  
\**Heterocrinus simplex*, var. *grandis*, Meek.  
✓ †*Heterocrinus (Iocrinus) subcrassus*, Meek & Worth.  
*Heterocrinus tenuis*, Billings.  
*Heterocrinus vaupeli*, Wetherby.  
*Poteriocrinus (Dendrocrinus) caduceus*, Hall.  
*Poteriocrinus (Dendrocrinus) casei*, Meek.  
*Poteriocrinus (Dendrocrinus) cincinnatensis*, Meek.  
*Poteriocrinus (Dendrocrinus) covingtonensis*, W'by.  
*Poteriocrinus (Dendrocrinus) (?) curtus*, Ulrich.  
*Poteriocrinus (Dendrocrinus) dyeri*, Meek.  
*Poteriocrinus (Dendrocrinus) naviolum*, S. A. M.  
\**Poteriocrinus (Dendrocrinus) polydactylus*, Shum'rd.  
*Poteriocrinus (Dendrocrinus) posticus*, Hall.  
*Reteocrinus gracilis*, Wetherby.  
*Reteocrinus (Glyptocrinus) richardsoni*, Wetherby.  
*Xenocrinus cancellatus*, S. A. M.

## Order CYSTOIDEA.

✓ \**Agelacrinites cincinnatensis*, Römer.  
*Agelacrinites holbrooki*, James.  
\**Agelacrinites pileus*, Hall.  
*Agelacrinites septembrachiatus*, Miller and Dyer.  
\**Agelacrinites vorticellatus*, Hall.  
*Cyclocystoides bellulus*, Miller and Dyer.  
*Cyclocystoides magnus*, Miller and Dyer.  
*Cyclocystoides minus*, Miller and Dyer.  
*Cyclocystoides mundulus*, Miller and Dyer.  
*Cyclocystoides parvus*, Miller and Dyer.  
*Hemicystites granulatus*, Hall.  
\**Hemicystites stellatus*, Hall.  
*Lepocrinites moorei*, Meek.  
\**Lichenoerinus crateriformis*, Hall.  
*Lichenocrinus dubius*, S. A. Miller.  
*Lichenocrinus dyeri*, Hall.  
*Lichenocrinus pattersoni*, S. A. Miller.  
*Lichenocrinus tuberculatus*, S. A. Miller.  
*Microcystites globosus*, Ulrich. §

## Order ASTEROIDEA.

*Palaeaster clarkana*, S. A. Miller.  
*Palaeaster dubius*, Miller & Dyer.  
*Palaeaster dyeri*, Meek.  
*Palaeaster excultus*, S. A. Miller.  
*Palaeaster finei*, Ulrich.  
*Palaeaster granulosus*, Hall.  
*Palaeaster harrisi*, S. A. Miller.  
*Palaeaster incomptus*, Meek.  
*Palaeaster jamesi*, Dana.  
*Palaeaster longibrachiatus*, S. A. Miller.  
*Palaeaster miamensis*, S. A. Miller.  
*Palaeaster shafferi*, Hall.  
*Palaeaster simplex*, S. A. Miller.  
*Palaeaster spinulosus*, Miller & Dyer.

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*Palæasterina approximata*, Miller & Dyer.  
*Palæasterina speciosa*, Miller and Dyer.  
*Stenaster grandis*, Meek.

Order OPHIUROIDEA.

*Protaster* (*Protasterina*, Ulr.) *granuliferus*, Meek.  
*Protaster* (*Protasterina*, Ulr.) *flexuosa*, Miller & Dyer.  
*Protasterina fimbriata*, Ulrich.

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MOLLUSCOIDEA.

Class POLYZOA.

✓ \**(Alecto) Stomatopora auloporoides*, Nicholson.  
     (*Alecto*) *Stomatopora confusa*, Nicholson.  
     \**(Alecto) Stomatopora frondosa*, James.  
     \**(Alecto) Stomatopora nexilis*, James.  
 ✓ \**(Alecto) Stomatopora arachnoidea*, Hall.  
     *Bythopora fruticosa*, Miller and Dyer.  
     *Bythopora tenuichorda*, Ulrich.§  
     *Callopora cincinnatensis*, Ulrich.  
     \**Callopora milfordensis*, James.  
     \**Ceramopora alternata*, James.  
     \**Ceramopora beani*, James.  
     \**Ceramopora concentrica*, James.  
         *Ceramopora distincta*, Ulrich.§  
         *Ceramopora (?) irregularis*, James.  
         *Ceramopora marginata*, Ulrich.§  
         *Ceramopora multipora*, James.  
     \**Ceramopora nicholsoni*, James.  
     \**Ceramopora ohioensis*, Nicholson.  
     \**Ceramopora radiata*, James.  
         *Ceramopora utricula*, Ulrich.§  
     \**Ceramopora whitei*, James.  
     *Helopora (Bythopora) arctipora*, Nich.

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*Helopora (Bythopora) dendrina*, James.  
\**Helopora (Bythopora) meeki*, James.  
\**Helopora (Bythopora) parvula*, James.  
\**Helopora (Arthroclema ?) tenuis*, James.  
\**Hippothoa delicatula*, James.  
\**Hippothoa (Alecto) inflata*, Hall.  
*Intricaria clathrata*, Miller and Dyer.  
\**Ptilodictya acuminata*, James.  
*Ptilodictya antiqua*, James.  
*Ptilodictya birgunensis*, Ulrich.§  
\**Ptilodictya cincinnatensis*, James.  
\**Ptilodictya cleavelandi*, James.  
*Ptilodictya clintonensis*, James.  
*Ptilodictya dubia*, James.  
*Ptilodictya (Arthropora) emacerata*, Nich.  
✓ \**Ptilodictya falciformis*, Nich.  
*Ptilodictya fenstelliformis*, Nich.  
\**Ptilodictya (Heterodictya) flabella*, Ulrich.§  
*Ptilodictya flagellum*, Nicholson.  
\**Ptilodictya flexuosa*, James.  
†*Ptilodictya (Arthropora) fragalis*, Billings.  
*Ptilodictya grahami*, James.  
\**Ptilodictya granulosa*, James.  
\**Ptilodictya hilli*, James.  
*Ptilodictya (Arthropora) internodia*, Miller & Dyer.  
*Ptilodictya kentuckyensis*, James.  
*Ptilodictya latirama*, Ulrich.§  
— *Ptilodictya (Heterodictya) maculata*, Ulrich.§  
*Ptilodictya (Heterodictya) magnifica*, S. A. Miller.  
*Ptilodictya monticulipora*, Dennis.  
\**Ptilodictya (Arthropora) nitidula*, Billings.  
*Ptilodictya (Heterodictya) nodosa*, James.  
\**Ptilodictya parallela*, James.  
*Ptilodictya perelegans*, Ulrich.  
*Ptilodictya (Heterodictya) plumaria*, James.  
*Ptilodictya (Heterodictya) ponderosa*, Ulrich.§  
✓ \**Ptilodictya (Arthropora) shafferi*, Meek.

*Ptilodictya teres*, James.  
*Rapalonaria venosa*, Ulrich.

Class BRACHIOPODA.

*Crania alternata*, James.  
*Crania asperula*, James.  
*Crania costata*, James.  
*Crania dyeri*, S. A. Miller.  
\**Crania laelia*, Hall.  
*Crania multipunctata*, S. A. Miller.  
*Crania parallela*, Ulrich.  
\**Crania percarinata*, Ulrich.  
*Crania reticularis*, S. A. Miller.  
✓ \**Crania scabiosa*, Hall.  
\**Crania socialis*, Ulrich.  
*Discina pelopea* (?) Billings.  
*Discina* (?) *punctata*, Ulrich. §  
*Discina sublamellosa*, Ulrich.  
*Discina tenuistriata*, Ulrich.  
*Leptæna plicatella*, Ulrich.  
✓ \**Leptæna sericea*, Sowerby.  
✓ \**Leptæna sericea*, var. *aspera*, James.  
*Leptobolus elongatus*, Ulrich.  
*Leptobolus lepis*, Hall.  
*Leptobolus insignis*, Hall.  
*Lingula* (*Lingulella*) *attenuata*, Sowerby.  
*Lingula belliformis*, Ulrich. §  
*Lingula bisulcata*, Ulrich. §  
*Lingula covingtonensis*, Hall & Whitfield.  
\**Lingula daphne*, Billings.  
*Lingula elderi*, Whitfield.  
*Lingula modesta*, Ulrich. §  
*Lingula* (*Lingulella*) *norwoodi*, James.  
*Lingula quadrata*, Eichwald.  
*Lingula* (*Lingulella*) *riciniformis*, Hall.  
\**Lingula* (*Lingulella*) *van horni*, S. A. Miller.

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- \**Lingulella cincinnatensis*, Hall & Whitfield.
- †*Orthis aequivalvis*, Hall.
- \**Orthis bellula*, James.
- ✓ \**Orthis biforata*, Schlotheim.
- ✓ *Orthis biforata*, var. *acuminata*, James.
- ✓ \**Orthis biforata*, var. *acutilirata*, James.
  - Orthis biforata*, var. *anniana*, James.
  - Orthis biforata*, var. *cypha*, James.
- ✓ *Orthis biforata*, var. *dentata*, Pander.
  - Orthis biforata*, var. *inflata*, James.
- \**Orthis biforata*, var. *laticostata*, James.
- ✓ \**Orthis biforata*, var. *lynx*, Von Buch.
- ✓ *Orthis biforata*, var. *profundō-sulcata*, Owen.
  - \**Orthis borealis*, Billings.
  - Orthis clytie*, Hall.
  - Orthis centrilineata*, Hall.
  - Orthis cincinnatensis*, Ulrich.
  - Orthis crassa*, James.
  - \**Orthis cyclus*, James.
  - Orthis dichotoma*, Hall.
  - Orthis disparilis*, Conrad.
- ✓ \**Orthis ella*, Hall.
- ✓ \**Orthis emacerata*, Hall.
  - Orthis emacerata*, var. *meeki*, S. A. Miller.
  - Orthis erratica*, Hall.
- ✓ \**Orthis fissicosta*, Hall.
- \**Orthis insculpta*, Hall.
- *Orthis jamesi*, Hall.
  - \**Orthis linneyi*, James.
  - Orthis merope*, Billings.
- ✓ *Orthis morrowensis*, James.
- ✓ \**Orthis multisecta*, James.
- \**Orthis neglecta*, James.
- ✓ \**Orthis occidentalis*, Hall.
  - Orthis orthambonites*, Pander.
  - Orthis pectinella*, Conrad.
  - Orthis pectinella*, var. *semiovalis*, Hall.

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- ✓ \**Orthis plicatella*, Hall.  
*Orthis pumila*, Ulrich.
- ✓ \**Orthis retrorsa*, Salter.  
*Orthis (Zygospira ?) sectostriata*, Ulrich.
- \**Orthis sinuata*, Hall.  
*Orthis subelegantula*, Ulrich.
- ✓ \**Orthis subquadrata*, Hall.
- ✗ \**Orthis testudinaria*, Dalman.  
\**Orthis testudinaria*, var. *jugosa*, James.  
*Orthis tricenaria*, Conrad.
- \**Orthis triplicatella*, Meek.
- ✓ \**Pholidops cincinnatensis*, Hall.
- ✓ \**Rhynchonella capax*, Conrad.  
\**Rhynchonella capax*, var. *perlamellosa*, Whitfield.  
\**Rhynchonella dentata*, Hall.
- ✓ \**Schizocrania filosa*, Hall.  
*Streptorhynchus approximatus*, James.  
\**Streptorhynchus elongatus*, James.  
*Streptorhynchus filitextus*, Hall.  
*Streptorhynchus hallianus*, S. A. Miller.  
\**Streptorhynchus neglectus*, James.
- ✓ \**Streptorhynchus nutans*, James.
- ✓ \**Streptorhynchus planoconvexus*, Hall.  
*Streptorhynchus sinuatus*, Emmons.
- ✓ \**Streptorhynchus subtentus*, Conrad.  
\**Streptorhynchus subtentus*, var. *planumbonus*, Hall.
- ✓ \**Streptorhynchus sulcatus*, Verneuil.  
\**Streptorhynchus vetustus*, James.
- ✓ \**Strophomena alternata*, Conrad.  
*Strophomena alternata*, var. *alternistriata*, Hall.  
*Strophomena alternata*, var. *loxorhytis*, Meek.
- ✓ \**Strophomena alternata*, var. *nasuta*, Conrad.  
*Strophomena camerata*, Conrad.  
*Strophomena declivis*, James.
- ✓ \**Strophomena fracta*, Meek.  
*Strophomena philomela*, Billings.
- ✓ \**Strophomena rhomboidalis*, Wilckens.

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- \**Strophomena rhomboidalis*, var. *gibbosa*, James.
- \**Strophomena squamula*, James.
- \**Strophomena tenuistriata*, Sowerby.
- Strophomena tenuilineata*, Conrad.
- \**Strophomena ulrichi*, James.
- Trematis crassipuncta*, Ulrich.§
- Trematis dyeri*, S. A. Miller.
- Trematis magna*, Ulrich.§
- ✓ \**Trematis millepunctata*, Hall.
- \**Trematis punctostriata*, Hall.
- Trematis quincuncialis*, Miller & Dyer.
- Trematospira granulifera*, Nicholson.
- \**Trematospira quadriplicata*, S. A. Miller.
- Trematospira (?) similis*, Ulrich.§
- ✓ \**Zygospira cincinnatensis*, James.
- Zygospira concentrica*, Ulrich.
- \**Zygospira headi*, Billings.
- ✓ \**Zygospira modesta*, Say.
- Zygospira modesta*, var. *kentuckyensis*, James.

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## MOLLUSCA.

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### Class GASTEROPODA.

- ✓ \**Bellerophon bilobatus*, Sowerby.
- Bellerophon capax*, Ulrich.§
- Bellerophon mohri*, S. A. Miller.
- Bellerophon morrowensis*, Miller & Dyer.
- Bucania costata*, James.
- Bucania expansa*, Hall.
- Carinaropsis patelliformis*, Hall.
- ✓ \**Cyclonema bilix*, Hall.
- *Cyclonema conicum*, S. A. Miller.
- \**Cyclonema fluctuatum*, James.

Cyclonema (*Holopea*) minor, James.  
Cyclonema montrealensis, Billings.  
Cyclonema percarinatum, Hall.  
— \*Cyclonema phaedra, Billings.  
— \*Cyclonema pyramidatum, James.  
Cyclonema transversum, Ulrich. §  
Cyclonema varicosum, Hall.  
Cyclora depressa, Ulrich.  
Cyclora hoffmani, S. A. Miller.  
✓ Cyclora minuta, Hall.  
Cyclora parvula, Hall.  
Cyrtolites carinatus, S. A. Miller.  
Cyrtolites compressus, Conrad.  
Cyrtolites costatus, James.  
Cyrtolites dyeri, Hall.  
Cyrtolites elegans, S. A. Miller.  
Cyrtolites magnus, S. A. Miller.  
Cyrtolites nitidulus, Ulrich.  
✓ \*Cyrtolites ornatus, Conrad.  
\*Fusispira subfusiformis, Hall.  
Fusispira terebriformis, Hall.  
*Holopea* obliqua, Hall.  
*Holopea* paludinaformis, Hall.  
Microceras inornatum, Hall.  
Microceras minutissimum, Ulrich.  
Murchisonia angustata, Hall.  
Murchisonia angustina, Billings.  
✓ \*Murchisonia bellacincta, Hall.  
Murchisonia decurta, Hall.  
✓ \*Murchisonia gracilis, Hall.  
✓ \*Murchisonia milleri, Hall.  
Murchisonia multigruma, S. A. Miller.  
\*Murchisonia perangulata, Hall.  
\*Murchisonia simulatrix, Billings.  
Murchisonia sumnerensis, Safford.  
Murchisonia uniangulata, Hall.  
Ophileta levata (?) Vanuxem.

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Pleurotomaria ambigua, Hall.  
 Pleurotomaria calphurnia (?) Billings.  
 Pleurotomaria carinata, James.  
 Pleurotomaria dryope, Billings.  
 Pleurotomaria halli, S. A. Miller.  
 Pleurotomaria lenticularis, Sowerby.  
 — \*Pleurotomaria ohioensis, James.  
 \*Pleurotomaria subconica, Hall.  
 Pleurotomaria subtilstriata, Hall.  
 Pleurotomaria tropidophora, Meek.  
 Pleurotomaria umbilicata, Hall.  
 ✓ \*Raphistoma lenticulare, Conrad.  
 Raphistoma planispira, Hall.  
 Raphistoma planistria, Hall.  
 Raphistoma staminium, Dennis.  
 Subulites acceptus, Ulrich. §  
 \*Trochonema umbilicatum, Hall.

#### Class PTEROPODA.

Conularia formosa, Miller & Dyer.  
 Conularia quadrata, Walcott.  
 Conularia trentonensis, Hall.  
 Hyolithes americanus, Billings.

#### Class CEPHALOPODA.

Cyrtoceras amoenum, S. A. Miller.  
 Cyrtoceras conoidale, Wetherby.  
 Cyrtoceras irregulare, Wetherby.  
 Cyrtoceras magister, S. A. Miller.  
 Cyrtoceras ventricosum, S. A. Miller.  
 Cyrtoceras vallandighami, S. A. Miller.  
 Endoceras annulatum, Hall.  
 Endoceras approximatum, Hall.  
 \*Endoceras magniventrum, Hall.  
 ✓ \*Endoceras proteiforme, Hall.  
 Endoceras proteiforme, var. strangulatum, Hall.

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- ✓ *Endoceras proteiforme*, var. *lineolatum*, Hall.
- ✓ *Endoceras subcentrale*, Hall.
- ✓ *Gomphoceras acceptum*, Ulrich. §
- ✓ *Gomphoceras eos*, Hall & Whitfield.
- ✓ *Ormoceras tenuifilum*, Hall.
- ✓ *Orthoceras amplicameratum*, Hall.
- ✓ *Orthoceras annellum*, Conrad.
- ✓ *Orthoceras byrnesi*, S. A. Miller.
- \* *Orthoceras carleyi*, Hall & Whitfield.
- ✓ *Orthoceras cincinnatensis*, S. A. Miller.
- ✓ *Orthoceras duryi*, S. A. Miller.
- ✓ \* *Orthoceras duseri*, Hall and Whitfield.
- ✓ *Orthoceras dyeri*, S. A. Miller.
- \* *Orthoceras fosteri*, S. A. Miller.
- \* *Orthoceras halli*, S. A. Miller.
- ✓ *Orthoceras harperi*, S. A. Miller.
- ✓ \* *Orthoceras hindei*, James.
- ✓ \* *Orthoceras junceum*, Hall.
- ✓ *Orthoceras meeki*, S. A. Miller.
- ✓ *Orthoceras mohri*, S. A. Miller.
- ✓ *Orthoceras ortoni*, Meek.
- ✓ † *Orthoceras transversum*, S. A. Miller.
- ✓ *Orthoceras turbidum*, Hall and Whitfield.
- ✓ *Phragmoceras hector* (?) Billings.
- ✓ *Trochoceras baeri*, Meek and Worthen.
- ✓ *Trocholites ammonius*, Conrad.
- ✓ *Trocholites circularis*, Miller and Dyer.
- ✓ *Trocholites minusculus*, Miller and Dyer.

#### Class LAMELLIBRANCHIATA.

- Ambonychia bellastrata*, Hall.
- Ambonychia casei*, Meek and Worthen.
- Ambonychia costata*, James.
- ✓ *Ambonychia obtusa*, Hall.
- ✓ \* *Ambonychia radiata*, Hall.
- ✓ *Ambonychia retrorsa*, S. A. Miller.
- ✓ *Ambonychia robusta*, S. A. Miller.

*Angellum cuneatum*, S. A. Miller.  
\**Anodontopsis* (?) *milleri*, Meek.  
*Anodontopsis* (?) *unionoides*, Meek.  
*Anomalodonta alata*, Meek.  
*Anomalodonta gigantea*, S. A. Miller.  
*Cardiomorpha* (?) *obliquata*, Meek.  
*Cleidophorus ellipticus*, Ulrich.  
*Cleidophorus fabulus*, Hall.  
*Cleidophorus major*, Ulrich.  
*Cleidophorus planulatus*, Conrad.  
*Cleidophorus subellipticus*, Ulrich.§  
*Cuneamya ampla*, Ulrich.§  
*Cuneamya curta*, Whitfield.  
*Cuneamya contracta*, Ulrich.§  
*Cuneamya inflata*, Ulrich.§  
✓ *Cuneamya miamiensis*, Hall & Whitfield.  
*Cuneamya parva*, S. A. Miller.  
*Cuneamya scapha*, Hall & Whitfield.  
*Cuneamya subeurta*, Ulrich.§  
*Cycloconcha mediocardinalis*, S. A. Miller.  
*Cypricardites dorsata*, Ulrich.  
(*Syn. C. carinata*, Meek.)  
*Cypricardites hainesi*, S. A. Miller.  
*Cypricardites quadrangularis*, Whitfield.  
*Cypricardites sterlingsensis*, Meek & Worthen.  
*Cypricardites subtruncata*, Hall.  
*Cypricardites ventricosa*, Hall.  
*Cypricardites* (*Cyrtodonta*) *hindi*, Billings.  
*Lyrodesma cincinnatensis*, Hall.  
*Lyrodesma planum*, Conrad.  
*Lyrodesma* (*Nucula*) *postriatum*, Emmons.  
*Megambonia jamesi*, Meek.  
*Modiolopsis anodontoides*, Conrad.  
*Modiolopsis cincinnatensis*, Hall & Whitfield.  
✓ \**Modiolopsis concentrica*, Hall & Whitfield.  
*Modiolopsis cuneiformis*, James.  
*Modiolopsis curta*, Hall.

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✓ *Modiolopsis faba*, Conrad.  
✓ *Modiolopsis modioliformis*, Meek & Worthen.  
✓ \**Modiolopsis mediolaris*, Conrad.  
✓ *Modiolopsis nasuta*, Conrad.  
\**Modiolopsis pholadiformis*, Foster & Whitney.  
*Modiolopsis spatulata*, James,  
*Modiolopsis terminalis*, Hall.  
✓ \**Modiolopsis truncata*, Hall.  
*Modiolopsis versaillesensis*, S. A. Miller.  
*Nuculites yoldiaformis*, Ulrich.  
*Orthodesma byrnesi*, S. A. Miller.  
*Orthodesma cancellatum*, Ulrich.§  
\**Orthodesma (Orthonota) contractum*, Hall.  
*Orthodesma cuneiforme*, S. A. Miller.  
✓ *Orthodesma curvatum*, Hall & Whitfield.  
*Orthodesma intermedium*, Ulrich.§  
*Orthodesma mickleboroughi*, Whitfield.  
\**Orthodesma (Orthonata) parallelum*, Hall.  
*Orthodesma occidentale*, S. A. Miller.  
*Orthodesma rectum*, Hall & Whitfield.  
*Orthodesma subovale*, Ulrich.  
*Orthonota pholadis*, Conrad.  
*Pterinea bellilineata*, Billings.  
\**Pterinea (Avicula) corrugata*, James.  
✓ \**Pterinea (Avicula) demissa*, Conrad.  
✓ \**Pterinea (Avicula) insueta*, Conrad.  
*Pterinea (Avicula) mucronata*, Ulrich.  
*Pterinea subquadrata*, James.  
*Pterinea (Avicula) welchi*, James.  
*Sedgwickia compressa*, Meek.  
*Sedgwickia divaricata*, Hall and Whitfield.  
*Sedgwickia fragilis*, Meek.  
*Sedgwickia lunulata*, Whitfield.  
*Sedgwickia (?) neglecta*, Meek.  
*Tellinomya cincinnatensis*, Hall.  
*Tellinomya cingulata*, Ulrich.  
*Tellinomya gibbosa*, Hall.

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Tellinomya hilli, S. A. Miller.  
 ✓ Tellinomya elevata, Hall.  
 Tellinomya nasuta, Hall.  
 ✓ Tellinomya (Nucula) obliqua, Hall.  
 Tellinomya pectenculoides, Hall.

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## ARTICULATA.

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### Class ANNELIDA.

Arabellites lunatus, Hinde.  
 Arabellites minor, Ulrich.§  
 Arabellites parallelus, Ulrich.§  
 Arabellites quadratus, Hinde.  
 Arabellites tridentatus, Ulrich.§  
 Gonchiocolites? (Ortonia) conicus, Nich.  
 Conchiocolites (Ortonia) corrugatus, Nich.  
 — Conchiocolites (Ortonia) flexuosus, Hall.  
 — \*Conchiocolites (Ortonia) minor, Nich.  
 Conchiocolites (Ortonia) striatellus, Nich.  
 \*Eotrophonia setigera, Ulrich.  
 Eunicites simplex, Hinde.  
 Eunicites paucipens, Ulrich.§  
 Eunicites subcontortus, Ulrich.§  
 Lumbriconercites dactylodus, Hinde.  
 Lumbriconercites excavatus, Ulrich.§  
 Nereidavus varians, Grinnell.  
 Oenonites longidens, Ulrich.§  
 \*Protoscolex covingtonensis, Ulrich.  
 \*Protoscolex ornatus, Ulrich.  
 Protoscolex (?) simplex, Ulrich.  
 Protoscolex tenuis, Ulrich.  
 Protoscolex (?) flacidus, Ulrich.§  
 \*Serpulites dissolutus, Billings.  
 \*Serpulites jamesi, Nicholson.

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*Spirorbis cincinnatiensis*, Miller & Dyer.  
*Spirorbis lovelandensis*, James.  
*Tentaculites richmondensis*, S. A. Miller.  
\**Tentaculites sterlingensis*, Meek & Worthen.  
*Tentaculites tenuistriatus*, Meek & Worthen.  
*Walcottia cookana*, Miller & Dyer.  
*Walcottia rugosa*, Miller & Dyer.  
*Walcottia sulcata*, James.

### Class CRUSTACEA.

\**Acidaspis cincinnatiensis*, Meek.  
*Acidaspis cerelepta*, Anthony.  
*Acidaspis anchoralis*, S. A. Miller.  
\**Acidaspis crossota*, Locke.  
*Acidaspis o'nealli*, S. A. Miller.  
*Acidaspis trentonensis*, Hall.  
\**Asaphus gigas*, DeKay. } *spinosus*  
\**Asaphus megistos*, Locke. }  
*Beyrichia* (*Primitia*, Jones) *cincinnatiensis*, S. A. M.  
\**Beyrichia chambersi*, S. A. Miller.  
\**Beyrichia ciliata*, Emmons.  
*Beyrichia duryi*, S. A. Miller.  
*Beyrichia elongata*, Ulrich. §  
✓ \**Beyrichia oculifera*, Hall.  
\**Beyrichia persulcata*, Ulrich.  
*Beyrichia regularis*, Emmons.  
*Beyrichia richardsoni*, S. A. Miller.  
*Beyrichia* (*Primitia*) *striatomarginata*, S. A. Miller.  
\**Calymene christyi*, Hall.  
✓ \**Calymene senaria*, Conrad.  
*Ceraurus icarus*, Billings.  
*Ceraurus perforator*, Billings.  
\**Ceraurus pleurexanthemus*, Green.  
*Cythere cincinnatiensis*, Meek.  
*Cythere irregularis*, S. A. Miller.  
*Dalmanites achates*, Billings.  
*Dalmanites breviceps*, Hall.

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\**Dalmanites carleyi*, Meek.  
*Dalmanites callicephalus*, Hall.  
*Enploura* (*Anomalocistices*) *balanoides*, Meek.  
*Leperditia* (*Isochilina*, Jones) *ampla*, Ulrich.§  
*Leperditia* (*Isochilina*, Jones) *approximata*, Ulrich.§  
*Leperditia* (*Primitia*) *bipartia*, Ulrich.§  
*Leperditia* (*Primitia*) *bivertex*, Ulrich.  
 \**Leperditia* (*Primitia*) *byrnesi*, S. A. Miller.  
 \**Leperditia* (*Primitia*) *crepiformis*, Ulrich.  
 \**Leperditia* (*Cytheropsis*) *cylindrica*, Hall.  
*Leperditia* *cæcigena*, S. A. Miller.  
*Leperditia* (*Isochilina*) *gibbosa*, Ulrich.§  
*Leperditia* *glabra*, Ulrich.§  
*Leperditia* *josephana*, Jones.  
*Leperditia* (*Isochilina*) *latimarginata* (?) Ulrich.§  
*Leperditia* (*Primitia*) *logani*, Jones.  
*Leperditia* (*Isochilina* ?) *minutissima*, Hall.  
*Leperditia* *radiata*, Ulrich.  
*Leperditia* *tumida*, Ulrich.§  
 \**Leperditia* (*Cytheropsis*) *unicornis*, Ulrich.  
*Lichas* *harrisi*, S.A.M.  
*Lichas* *trentonensis*, Conrad.  
*Proetus* *parviusculus*, Hall.  
*Proetus* *spurlocki*, Meek.  
 \**Triarthrus* *becki*, Green.  
*Trinucleus* *bellulus*, Ulrich.  
 \**Trinucleus* *concentricus*, Eaton.

• PISCES (?).

*Depranodus* *subrectus*, Ulrich.§  
*Depranodus* *sulcatus*, Ulrich.§  
*Prionodus* *disparilis*, Ulrich.§

INCERTA SEDES.

*Anomaloides* *reticulatus*, Ulrich..  
*Asaphoidichnus* *dyeri*, S.A.M.  
*Asaphoidichnus* *trifidus*, S.A.M.

Lepidolites dickhauti, Ulrich.  
Lepidolites elongatus, Ulrich.  
Ormathichnus moniliformis, S.A.M.  
Pasceolus claudi, S.A.M.  
Pasceolus darwini, S. A. Miller.  
Pasceolus gibbosus, Billings.  
Petalichnus multipartitus, S.A.M.  
Plumulites (?) dubius, Ulrich.δ  
\*Plumulites jamesi, Hall & Whitfield.  
\*Scolithus delicatulus, James.  
\*Scolithus linearis, Haldeman.  
Scolithus tuberosus, Miller & Dyer.  
Teratichnus confertus, S. A. Miller.  
Trachomatichnus cincinnatensis, S. A. Miller.  
Trachomatichnus numerosus, S. A. Miller.  
Trachomatichnus permultus, S. A. Miller.

✓ *Dolabrat* *lanceolata*

✓ *Byrrhatoxylon parallella*

Mo

*Maquira* Group

Rocks of *Ordesa* and *Sierra de Gredos*

*Eucalyptus* *crassana*

*Catalpa*

*Abies* *nothofolia*

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